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Five-Year Review Report
Second Five-Year Review Report
For
Sanitary Landfill Site
(a.k.a. Cardington Road Landfill Site)

Montgomery County, Ohio

PREPARED BY:

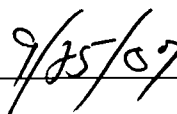
U.S. Environmental Protection Agency
Region 5

Approved by:



for Richard C. Karl, Director
Superfund Division

Date:



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Five-Year Review Report

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
U.S. EPA	United States Environmental Protection Agency
IC	Institutional Control
MCL	Maximum Contaminant Level
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OEPA	Ohio Environmental Protection Agency
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objectives
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SDMS	Superfund Data Management System
SOW	Statement of Work
UECA	Uniform Environmental Covenants Act
VOC	Volatile Organic Compound

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Executive Summary

The remedy for the Sanitary Landfill Site (a.k.a. Cardington Road Landfill) in Montgomery County, Ohio, included a solid waste landfill cap, a gas collection and destruction system, surface run-off controls and drainage channels, fencing and institutional controls. The Site achieved construction completion with the signing of the Preliminary Close Out Report on September 23, 1998. The trigger for this five-year review was the first Five-Year Review which was signed on September 25, 2002.

The Site remedy is protective of human health and the environment while migration and treatment of landfill gases is maintained. The selected remedy eliminates the principal threats identified in the risk assessment by collecting and destroying the landfill gases, preventing direct contact with landfill waste, and reducing infiltration of water into waste thus preventing the formation of leachate at the Site. Long-term protectiveness requires compliance with effective Institutional Controls (ICs). Compliance with effective ICs will be ensured by implementing, maintaining, and monitoring effective ICs as well as maintaining the Site remedy components.

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Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Sanitary Landfill Site (a.k.a. Cardington Road Landfill)		
U.S. EPA ID (from WasteLAN): OHD093895787		
Region: 5	State: Ohio	City/County: Moraine/Montgomery
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple OUs?* <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Construction completion date: 09/23/1998
Has Site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> U.S. EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Linda A. Kern		
Author title: Remedial Project Manager	Author affiliation: U.S. EPA Region 5	
Review period: February 9, 2007 to September, 2007		
Date(s) of Site inspection: September 18, 2007		
Type of review: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <input type="checkbox"/> Regional Discretion </div>		
Review number: <input type="checkbox"/> 1 (first) <input checked="" type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify) _____		
Triggering action: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <input type="checkbox"/> Actual RA Onsite Construction at OU # _____ <input type="checkbox"/> Actual RA Start at OU# _____ </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <input type="checkbox"/> Other (specify) Report </div>		
Triggering action date (from WasteLAN): 09/25/2002		
Due date (five years after triggering action date): 09/25/2007		

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Issues:

1. Analysis of the institutional controls which have been implemented at the Site is needed to assure that effective proprietary or governmental ICs are in place so that the remedy continues to function as intended. Additional preparedness is also necessary to ensure effective procedures are in place for long-term stewardship at the Site. This IC analysis will be performed as part of an IC Study;
2. Long-term stewardship must be assured which includes implementing, maintaining and monitoring effective ICs.
3. The Site's QAPP is not finalized and long-term groundwater monitoring needs to be completed;
4. Proposal to use alternative to 40 CFR 60.18 flare requirements.

Recommendations and Follow-Up Actions:

1. Complete an IC study for the Site;
2. Prepare an IC plan to incorporate IC evaluation activities, propose additional IC evaluation activities and plan corrective measures, if needed to assure long-term stewardship of the Site. Long-term stewardship must be assured which includes implementing, maintaining and monitoring effective ICs.
3. The Site's QAPP should be finalized and long-term groundwater monitoring should be completed; and
4. Complete evaluation of proposed alternative to flare requirements.

Protectiveness Statement:

The Site remedy is protective of human health and the environment while migration and treatment of landfill gases is maintained. The selected remedy eliminates the principal threats identified in the risk assessment by collecting and destroying the landfill gases, preventing direct contact with landfill waste and reducing infiltration of water into waste, thus preventing the formation of leachate at the Site. Long-term protectiveness requires compliance with effective ICs. Compliance with effective ICs will be ensured by implementing, maintaining and monitoring effective ICs, as well as maintaining the Site remedy components.

Other Comments:

None

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a Site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the Site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such Site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the result of all such reviews, and any actions taken as a result of such reviews."

The Agency interpreted this requirement further in the NCP; 40 CFR § 300.430(f)(4)(ii) states:

"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action."

The United States Environmental Protection Agency (U.S. EPA Region 5) conducted this five-year review of the remedy implemented at the Sanitary Landfill Site in Moraine, Ohio. This review was conducted by the Remedial Project Manager (RPM) for the entire Site from February 2007 through August 2007. This report documents the results of the review.

This is the second five year review for the Sanitary Landfill Site. The triggering action for this review is the date of the first five year review, as shown in U.S. EPA's WasteLAN database is September 25, 2002. This statutory five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site at levels which do not allow for unlimited use and unrestricted exposure.

II. Site Chronology

Event	Date
Site operated as a landfill	1965 to 1980
State of Ohio licensed operation of the Site as a solid waste disposal facility	January 1971
The Sanitary Landfill Company requested lease termination and indicated to the State of Ohio that waste disposal activities were complete	January 1980
A surface water retention pond at the southern-most corner of the Site was filled to bring the area to grade level	February 1980
Site was covered with soil ranging in thickness from two to eight feet and over thirty vents were installed into the landfill to control the migration of gases	Later in 1980
The Site was reevaluated by the Montgomery County Health Department in response to concerns about the possible discharge of storm water runoff from the Site	1981
The Site was included on the National Priority List (NPL) (48FR40674)	June 10, 1986
U.S. EPA, the State of Ohio, and a group of potentially responsible parties (PRPs) entered into a three-part Administrative Order by Consent (AOC)	December 16, 1987
The Remedial Investigation was conducted	1989 through 1991
Feasibility Study completed	November, 1992
U.S. EPA issued the Record of Decision (ROD)	September 27, 1993
AOC signed between PRPs, U.S. EPA, and Ohio EPA to prepare the Remedial Design	May 27, 1994
Explanation of Significant Differences (ESD) issued	January 25, 1996
Remedial Action Consent Decree entered	August 12, 1996
Start of Remedial Action	August 11, 1997
U.S. EPA conducted pre-final inspection, which concluded that all construction activities were complete	September 17, 1998

Event	Date
U.S. EPA signed Preliminary Close-Out Report documenting that the remedy was constructed in accordance with the RD plans and specifications	September 23, 1998
First Five Year Review	September 25, 2002

III. Background

Physical Characteristics

The Sanitary Landfill Site is located at 1855 Cardington Road, Moraine, Ohio, in Montgomery County, approximately one mile south of the City of Dayton (See Figure 1). The property parcel on which the Site is located encompasses approximately 53 acres and is bounded on the south by Cardington Road, on the east by Lance Drive, on the north by Calvary Cemetery, and on the west by active and reclaimed sand and gravel quarries. (See Figure 2) The actual Site area used for waste disposal has been estimated to be about 36 acres. The Site is approximately 2,200 feet in length on the west boundary and 1,000 feet wide at the northern boundary.

Land and Resource Use

The Site is located at the top of a kame terrace in the Great Miami River Valley buried aquifer system, which has been designated by the U.S. EPA as a sole-source aquifer. Glacial materials deposited in the valley system, which are the primary source of groundwater, can range from 100 to 300 feet in thickness. The Great Miami River, which flows in a southerly direction, lies approximately 2,500 feet north and 4,000 feet west of the Site. No surface water streams are present near the Site. Topography at most of the Site is gently sloping to relatively flat.

The property surrounding the Site is zoned commercial, light industrial and residential. A single occupied residence abuts the site on the extreme northeastern perimeter of the Site. All residents in the area near the Site are provided with municipal drinking water.

History of Contamination

The Site is situated on property owned by two trusts controlled by the Snyder family. The property was leased to Moraine Materials Company, which mined the Site for sand and gravel throughout the 1960's. In January 1971, the State of Ohio licensed operation of the Site as a solid waste disposal facility. The Site was leased for use as a landfill to the Sanitary Landfill Company (subsequently owned by Danis Industries Corporation), which operated the facility during the entire licensed period. During land filling operations, the excavated sand and gravel pits were filled with commercial, industrial and municipal wastes. In January 1980, the Sanitary Landfill Company requested lease termination and indicated to the State of Ohio that waste disposal activities were complete.

Initial Response

As reported by a former Ohio EPA solid waste inspector, a surface water retention pond at the southern-most corner of the Site was filled by the Site owners after February 1980, mainly with construction debris, to bring the area to grade level. Later in 1980, the Site was covered with soil ranging in thickness from two to eight feet and over thirty vents were installed into the landfill to control the migration of gases. The Site was officially closed on July 18, 1980. In 1981, the Site was reevaluated by the Montgomery County Health Department in response to concerns about the possible discharge of storm water runoff from the Site onto Lance Drive. Subsequently, a storm water collection pond was constructed adjacent to the northeast corner of the Site to control runoff along Lance Drive.

The Site was placed on the National Priority List (NPL) in the Federal Register on June 10, 1986, based on U.S. EPA and Ohio EPA reports. Criteria considered in the Site evaluation included the population potentially at risk; the presence of potentially hazardous substances, industrial wastes, and other wastes disposed of at the Site; and the potential for ground water contamination.

Basis for Taking Action

The U.S. EPA, Ohio EPA, and a group of potentially responsible parties (PRPs) entered into a three-party Administrative Order by Consent (AOC) effective December 16, 1987. Under the terms of the AOC, the PRPs agreed to conduct the Remedial Investigation and Feasibility Study (RI/FS) for the Site with oversight by U.S. EPA and Ohio EPA. The RI was designed to determine the nature and extent of contamination at the Site through a sampling program for ground water, soils, surface water, sediments and air quality. Also included in the investigation was a cap integrity study and a waste characterization program consisting of geophysical surveys, vent gas surveys, soil, gas surveys, and intrusive borings into the cap and leachate sampling from the landfill.

Organic and inorganic compounds were detected in both upgradient and downgradient perimeter monitoring wells. Detected organic compounds ranged from 1 ug/l to 210 ug/l. Most of the organic compounds found were at low concentrations of less than 10 ug/l. There was an even distribution of organic and inorganic compounds found between different aquifer zones (depths) that were sampled; however, there was no pattern of consistent detections between individual monitoring wells. No pesticides or PCBs were detected in the ground water samples.

The investigation included the collection of liquid and sediment samples from ten sampling locations, both on-site and off-site, and three downgradient seep locations.

No volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, or polychlorinated biphenyls (PCBs) were identified in any of the surface water samples above the required detection limits. Numerous inorganic compounds were detected in the surface water samples collected. Numerous organic and inorganic compounds were detected in upgradient, on-site, and off-site downgradient sediment samples. Three VOCs and twenty-one inorganic compounds were detected in the seep liquids. The seeps were downgradient of the landfill and found at the same relative elevation as the landfill. No SVOCs, pesticides, or PCBs were detected in any seep sediment samples. Numerous inorganic compounds were detected in the seep sediments.

The air investigation was conducted to determine the migration and dispersion of potential chemical constituents in the ambient air on-site and along the perimeter of the Site (50-foot radius). This investigation included an ambient air survey conducted over the entire Site and perimeter areas located within 50 feet of the Site, and the collection and analysis of perimeter air samples at nine locations along the perimeter of the Site.

Several VOCs were detected both on-site and along the perimeter during this portion of the investigation. Organic compounds detected include, but are not limited to, trichlorofluoromethane, toluene, 1,1,1-TCA, acetone, 2-butanone, chloromethane, ethyl benzene, and methane. Many of the organic compounds detected were found in both upwind and downwind locations. No SVOCs were detected in upwind or downwind samples.

As part of the air quality investigation, chemical analyses of indoor air for workers in the Snyder Concrete Products Company were performed. This company's operation occurs on and next to the landfill. The chemical concentrations recorded in the single grab sample were taken under worst case conditions. 1,1-dichloroethylene and methylene chloride were two organic compounds that were detected. These two compounds were used to assess the risk posed by the Site and helped establish in the risk assessment that the principal threat was landfill gas.

IV. Remedial Actions

Remedy Selection

On September 27, 1993, U.S. EPA signed the Record of Decision (ROD) for the Site selecting a final remedy. The major components of the selected remedy discussed in the ROD were:

- ▶ Placement of a solid waste cap over the landfill area consisting of a vegetated layer, middle drainage layer, a low permeability layer, and a subgrade bedding layer;
- ▶ A gas management system consisting of the installation of approximately thirty new active gas extraction wells and treatment of the gases;
- ▶ Surface water run-off controls to protect the cap system and effectively discharge run-off from the landfill area;
- ▶ Monitoring of landfill gas emissions and groundwater which will determine whether the remedial actions conducted at the Site are effective;
- ▶ Institutional controls to restrict access to and limit future use of the Site, as well as to prevent use of groundwater beneath the Site as drinking water;
- ▶ A Supplemental Site Investigation (SSI) to further define the ground water flow gradients at the southern end of the landfill and to attempt to determine if the chemical constituents detected at the MW-9 cluster can be attributed definitively to the landfill; and
- ▶ Future evaluation of possible groundwater remedial alternatives should the results of the SSI indicate that a groundwater plume definitively originating from the landfill is present.

The purpose of the selected remedy was to eliminate the principal threats posed by the Site by collecting and destroying the landfill gases, preventing direct contact with landfill waste and greatly reducing the infiltration of water into waste, thus preventing the formation of leachate at the Site.

The 1993 ROD stated that "if the results of the SSI indicate that the presence of chemical contamination can be attributed to the landfill then a second phase of the SSI will be initiated to define the vertical and horizontal extent of the plume." Due to the addition of two wells at the southern end of the landfill and 12 rounds (all in 1995) of groundwater level measurement, it appeared that the low level contamination found in the MW-9 cluster might have been coming from the landfill. Therefore, the 1993 ROD would require a second phase of the SSI.

The U.S. EPA evaluated groundwater flow conditions at the Site and determined that, with the southerly flow direction at the Site, the trends for groundwater quality indicated that the groundwater conditions were improving. Total VOC concentrations in the MW-9 cluster declined from the time of the RI to the SSI. At the time, total concentrations in the MW-10 cluster remained relatively flat from quarter to quarter.

The results of the phase I SSI indicated that the total VOC concentrations in the MW-9 cluster declined over time. The RI found that two down gradient production wells (non-drinking wells) are located approximately one half mile south of the landfill; however, the flow direction at these locations was not conclusively established, and other potential sources have been identified between these wells and the Site. Other than these two down gradient production wells, there are no known users of groundwater within one mile of the Site.

Consideration was given to installing additional groundwater wells to define the limited nature and extent of contamination in the southern part of the Site. In order to facilitate other cleanup activities, the Agencies determined that further field work was not necessary at that time, as it was envisioned that long-term groundwater monitoring would be performed. If contamination is found in the future that warrants further action, then additional evaluation would be made at that time.

Based on the results of data generated during the SSI, it was determined that further SSI field work or further evaluation of the remedy as described in the 1993 ROD was not necessary with regard to groundwater. Therefore, U.S. EPA issued an Explanation of Significant Differences (ESD) on January 25, 1996.

Remedy Implementation

An AOC was signed between the Potentially Responsible Parties (PRPs) and the U.S. EPA and Ohio EPA on May 27, 1994, to prepare the Remedial Design (RD) for the selected remedy. The RD was completed and approved in April, 1996. The Remedial Action (RA) Consent Decree was lodged in Federal Court on June 17, 1996, and entered on August 12, 1996. The construction of the RA commenced on August 11, 1997. The contractor conducted remedial activities as planned but one new area of waste was identified during construction. When gas monitoring probes were being installed east of the Site, a waste area was discovered and high levels of methane were found in the bore holes. Combustible gas indicators (GCIs) were placed in nearby businesses as an additional precautionary measure. To date, no CGI has indicated that migration of methane has occurred within any monitored structure. U.S. EPA and Ohio EPA conducted a pre-final inspection on September 17, 1998, which concluded that all construction activities were completed in accordance with the RD specifications. A Preliminary Close Out Report (PCOR) was signed on September 23, 1998.

Institutional Controls

Institutional controls (ICs) are required to ensure the protectiveness of the remedy. Institutional controls are non-engineered instruments such as administrative and legal controls that help to minimize the potential for exposure to contamination and protect the integrity of the remedy. Institutional controls are required to assure long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE).

The ROD called for institutional controls to restrict access to and limit future use of the Site, as well as to prevent use of groundwater beneath the Site as drinking water.

The table below summarizes institutional controls for these restricted areas.

MEDIA, REMEDY COMPONENTS & AREAS THAT DO NOT SUPPORT UU/UE BASED ON CURRENT CONDITIONS	OBJECTIVES OF IC	TITLE OF INSTITUTIONAL CONTROL INSTRUMENT IMPLEMENTED
Landfill – Capped Area	Prohibit use except maintenance and assure integrity of the landfill cap	Will be evaluated
Groundwater – On Site current area that exceeds groundwater cleanup standards (Refer to Figure 1)	Prohibit groundwater use as drinking water until cleanup standards are achieved	Will be evaluated
Other Remedial Action Components	Prohibit Inconsistent Uses and protect the integrity of the remedy components	Will be evaluated

GIS maps and maps with metes and bounds legal descriptions which depict the current conditions of the Site and areas which do not allow for UU/UE, will be developed as part of the IC evaluation activities discussed below.

Long-term stewardship must be assured which includes implementing, maintaining, and monitoring effective ICs. An IC study will be requested from the signatories of the RA consent decree. The IC study will require specific IC evaluation activities. Those evaluation activities include: providing information regarding whether any ICs have been implemented or are planned to be implemented, evaluating the effectiveness of existing ICs and proposing additional ICs, if needed. Included in the evaluation will be: (1) whether the Site would benefit from the use of the Uniform Environmental Covenants Act (UECA) for any proprietary (non-governmental) ICs, (2) performing title work to confirm ownership and to ascertain whether prior-in-time encumbrances may interfere with the ICs, (3) preparation of maps (metes and bounds and GIS), as well as planning for long term stewardship.

Once the IC evaluation activities have been completed, an IC plan will be developed by U.S. EPA within 6 months of the Five Year Review and will include steps necessary to ensure that effective ICs are implemented, monitored and maintained. The IC Plan will incorporate the results of the evaluation plan, will direct any additional needed IC evaluation activities, and will include planning for IC implementation and long-term stewardship.

Current Compliance: Access to the Site is restricted by a fence. Based on inspections and discussions with Site representatives, EPA is not aware of Site or media uses which are inconsistent with the stated objectives of the ROD. The remedy is functioning as intended.

Long-Term Stewardship: Long-term protectiveness at the Site requires compliance with use restrictions to assure the remedy continues to function as intended. To assure proper maintenance and monitoring of effective ICs, long term stewardship procedures will be reviewed and a plan developed. The plan should include regular inspection of ICs at the Site and annual certification to U.S. EPA that ICs are in place and effective. Additionally, use of a communications plan and use of one-call system should be explored for long term stewardship.

System Operations/Operation and Maintenance

Long-term Operation and Maintenance (O&M) is being conducted by the PRPs who are signatories to the Consent Decree. This group is referred to in Site documents as the Remedial Action Group (RAG). The O&M activities for the Site are required to be conducted for a period of 30 years following completion of construction. The O&M activities include regular inspection to ensure the facilities are in proper functioning order, rehabilitation of facilities that have deteriorated or are worn and no longer serve the proper function, continued operation of the gas extraction and thermal destruction systems, sampling as required and regular reporting to the Agencies. All systems appear to be functioning normally.

V. Progress Since the Last Review

Since the first five-year review, long term post closure monitoring and maintenance has been performed at the Site. These activities include monthly inspections of the landfill cap, flare, pneumatic pumps, air compressors, condensate tanks and fence. Sampling of the gas compliance probes and landfill gas extraction wells was conducted to ensure that the Site remained in compliance.

The flare system, which consists of a single candlestick type device has been designed for a maximum flow rate of 1,000 scfm. The flare has been operating within a turndown range of 10:1 allowing for minimum flows in the range of 200 scfm. A single 20 hp blower assembly provides flow to the flare. The blower has been operating through integrated control circuitry which disables operation under the following conditions: (1) high condensate level; (2) high inlet gas temperature; (3) high gas pressure; (4) high blower bearing temperature; (5) no visible flame; (6) low flame temperature; and (7) blower surge. The flare controls have been operated in both automatic and manual mode, which has allowed for maximum flexibility in wellfield operation as gas levels have declined through the post-closure monitoring period.

The gas extraction system, due to declining gas yield is operated on an intermittent basis. The operating or active burn cycles are correlated to observed gas yield, as well as methane readings within perimeter monitoring probes.

Monitoring of subsurface gas monitoring probes is conducted weekly, with gas extraction wells sampled and adjusted every two weeks. These data are used to adjust (extend or shorten) active burn cycles for the flare. Combustible gas alarms located within adjacent structures are inspected for proper operation annually.

It has been noted that with the implementation of the landfill cap and subsequent reduction in moisture infiltration, gas yields from the landfill have been reduced.

VI. Five-Year Review Process

Administrative Components

The Sanitary Landfill five-year review was prepared by Linda Kern, Remedial Project Manager for the Site. The five-year review consisted of a review of relevant Site documents and monitoring data and a Site inspection completed on September 18, 2007.

Community Involvement

A public notice was placed in the Dayton Daily News on February 9, 2007, announcing that a five-year review was in progress and requested that any interested parties contact U.S. EPA personnel for additional information. Notice of the completed five-year review will be placed in the Dayton Daily News and the final report will be available in the Site's information repositories. The information repositories for the Site are located at the Dayton Public Library and the City of Moraine Library. A copy of the public notice is included in Attachment A.

Document Review

The following documents were reviewed during this five-year review process: RI/FS; ROD; ESD, Monthly Post-Closure Monitoring and Maintenance Reports; and Site correspondence.

The following standards were identified as applicable or relevant and appropriate requirements (ARARs) in the 1993 ROD for the Site and were reviewed for changes that could affect protectiveness:

Chemical Specific ARARs

Chemical Specific ARARs regulate the release to the environment of specific substances having certain chemical characteristics. As stated in the 1993 ROD, the selected remedy achieves fence line compliance with chemical specific ARARs relating to the collection and treatment by flaring of collected landfill gas. Federal and State ARARs relating to air emissions and the quality of ambient air should be met during and after construction of the remedy.

Other ARARs that were identified included Maximum Contaminant Levels (MCLs) established pursuant to the Safe Drinking Water Act, Ambient Water Quality Criteria, and State standards which give concentration limits for drinking water and surface waters. MCLs and State drinking water standards were identified as relevant and appropriate based on the possibility that groundwater beneath the Site might eventually be used as a source of drinking water. The other water quality standards and limits were identified as being applicable in the event that treated groundwater will be discharged to infiltration ponds or used in ground water re-injection. As has been discussed above, the results of the SSI field investigation demonstrated that no groundwater remedy was required. If contamination found is in the future warrants further action, then an evaluation will be performed by the Agencies. Long-term monitoring of groundwater and institutional controls will be conducted at the Site.

Action Specific ARARs

Action Specific ARARs are requirements that define acceptable treatment and disposal procedures for hazardous substances. As stated in the 1993 ROD, the cap was to be constructed in accordance with the requirements of Ohio Administrative Code (OAC) 3745-27-11, other Ohio Solid Waste Laws, and with RCRA Subtitle D specific requirements. Most RCRA requirements are administered under the State of Ohio's implementing regulations. Because of the topography of the landfill, stability analysis were required pursuant to OAC 3745-27-11(G)(1)(c) to establish alternate slope requirements for portions of the cap which did not allow for a slope between five and twenty-five percent.

Location Specific ARARs

Location Specific ARARs are those requirements that relate to the geographic position of a Site. No Location Specific ARARs were identified in the 1993 ROD.

Data Review

Overall, the system is operating as designed in collection and treatment of landfill gases. The Performance Standard for perimeter gas probe monitoring is detection of less than the LEL, or 5% combustible gas, at the property boundary.

It has been noted above that with the implementation of the landfill cap and resulting reduction in moisture infiltration, gas yields from the landfill have declined through the post-closure monitoring period. As a result of the declining gas yield, the gas extraction system is operated on an intermittent basis.

Site Inspection

A Site inspection was conducted on September 18, 2007. The inspection was performed by Linda Kern of U.S. EPA, who was accompanied by representatives of the Cardington Road Site Group including Michael Percival, Ralph Hirshberg, and Adam Paxton. The purpose of the inspection was to perform a walk through of the Site to evaluate current site conditions and assess the protectiveness of the remedial action. Inspected areas included the landfill cover and the landfill gas system (flare, pneumatic pumps, air compressor, well casings and condensate tanks). The perimeter fence and areas surrounding the Site were also observed.

The following conditions were noted:

- The perimeter fencing was intact and in good condition;
- Access gates to the fence were locked and secure;
- Appropriate informational signs were posted;
- No evidence of trespassing was observed;
- The vegetative landfill cover was in good condition;
- The landfill gas extraction wells and gas monitoring locations were observed to be in good condition.

A copy of the site inspection report, along with site photographs, is included in Attachment B.

Interviews

The landfill operators were interviewed during the site inspection regarding the on-going Site conditions. The operator indicated that there have been no problems with respect to trespassing or vandalism at the Site. Wildlife, including deer and coyote, are frequently seen on Site.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes. The review of documents, review of O&M data, and the results of the Site inspection indicates that the remedy is functioning as intended by the ROD. The placement of the landfill cap and construction of the landfill gas collection and thermal destruction system have achieved the remedial action objective to mitigate the principal threat of landfill gas presented by the Site.

Based on a review of the record, there appears to be compliance with the stated objectives of the use restrictions. Long term protectiveness requires compliance with effective ICs to ensure that the remedy continues to function as intended. Compliance with effective ICs will be ensured by implementing, maintaining, and monitoring effective ICs, as well as maintaining the Site remedy components. To that end, an IC study and IC plan will be developed.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Yes. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.

There have been no changes in standards to be considered for the Sanitary Landfill. Land use has not changed near the landfill. No new exposure pathways or receptors have been identified. The remedy is progressing as expected.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No. No additional information has come to light which would call into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed and the Site inspection, the remedy is functioning as intended. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy.

The Site's Quality Assurance Project Plan (QAPP) for long-term ground water monitoring needs to be finalized and ground water sampling must be performed.

The Ohio EPA had raised an issue with respect to Ohio Administrative Code (OAC) 3745-31-05, which establishes air permit criteria for permits to install (PTIs) and best available technologies (BATs). Generally, a permit is not required for on-site discharges at Superfund Sites. However compliance with the substantive portions of a permit is required.

The RAG has proposed to use alternatives to the 40 CFR 60.18 flare requirements for determining flare exit velocity and fuel gas heat content. The information provided by the RAG is currently under review. U.S. EPA, in coordination with Ohio EPA, will determine if the proposed alternatives to the 40 CFR 60.18 flare requirements for determining flare exit velocity and fuel gas heat content may be applied in this case.

VIII. Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1. Analysis of the institutional controls in place at the Site is needed to assure effective ICs are in place so that the remedy continues to function as intended, and to ensure effective procedures are in-place for long-term stewardship at the Site. This will be performed as part of an IC Study.	N	Y
2. Long-term stewardship must be assured which includes implementing, maintaining, and monitoring effective ICs.	N	Y
3. The Site's QAPP is not finalized and long term groundwater monitoring needs to be initiated.	N	Y
4. Proposal to use alternative to 40 CFR 60.18 flare requirements.	N	Y

IX. Recommendations and Follow-up Actions

ISSUE	RECOMMENDATIONS AND FOLLOW-UP ACTIONS	PARTY RESPONSIBLE	OVERSIGHT AGENCY	MILESTONE DATE	AFFECTS PROTECTIVENESS (Y/N) CURRENT/ FUTURE
1	Complete an IC study* for the Site.	PRPs	U.S. and Ohio EPA	March 2008	Current -- No Future - Yes
2	Prepare an IC plan to incorporate IC evaluation activities, propose additional IC evaluation activities and provide for corrective measures, if needed, to assure long-term stewardship of the Site.	U.S. and Ohio EPA	U.S. EPA	March 2008	Current -- No Future - Yes
3	The Site's QAPP should be finalized and long term groundwater monitoring should be initiated.	PRPs	U.S. and Ohio EPA	March 2008	Current -- No Future - Yes
4	Complete evaluation of proposed alternative flare requirements.	U.S. and Ohio EPA	U.S. and Ohio EPA	January 2008	Current -- No Future - Yes

* or: a) Evaluate the existing ICs to determine effectiveness and enforceability; b) Update Site ICs, if needed, to ensure that the ICs are properly recorded to give notice to future landowners for information relevant to land use restrictions and are enforceable; c) Prepare accurate maps of all areas that require land and groundwater restrictions; and d) Provide revision to the O&M plan to include mechanisms to ensure regular inspections of ICs at the Site, an annual certification to U.S. EPA that ICs are in place and effective, and a communication plan.

X. Protectiveness Statement

The Site remedy is protective of human health and the environment while migration and treatment of landfill gases is maintained. The selected remedy eliminates the principal threats identified in the risk assessment by collecting and destroying the landfill gases, preventing direct contact with landfill waste, and reducing infiltration of water into waste, thus preventing the formation of leachate at the Site. Long-term protectiveness requires compliance with effective ICs. Compliance with effective ICs will be ensured by implementing, maintaining and monitoring effective ICs as well as maintaining the Site remedy components.

XI. Next Review

The next five year review for the Site will be completed five years from the signature date of this review.

FIGURE

Attachment A

Public Notice

Five-year Review Report

WASHINGTON — Key House Democrats said Thursday they are considering a plan to close the prison at Guantanamo Bay, Cuba, by the end of 2008, with the exception of several dozen detainees in the war on terror who would be kept at the facility and tried there.

Rep. John Murtha, D-Pa., said he hopes to include the provision in legislation this spring that Democrats also intend to use to try to prevent further increases in troop strength in the war in Iraq.

Without public notice, Murtha dispatched Rep. Jim Moran, D-Va., to the detention center at the U.S. naval base at Guantanamo Bay on a one-day trip late last month to recommend ways for closing it. Both men said the prison has become counterproductive as the United States tries to win converts overseas in the war on terror.

"Without closing it, this just plays into the propaganda of the enemy," Moran said.

The prison was opened on Jan 11, 2002, and none of the more than 700 prisoners who have entered the facility — suspected of links to al-Qaida and the Taliban — has been tried.

the 800 detainees at the prison, and added he had told Murtha about 80 of are likely to face trial, including 14 whom he described as high value targets.

The Virginia lawmaker said 87 other detainees can probably be released without trial and should go either to their country of origin, or if that isn't possible, to Afghanistan, where they were captured.

Moran said he had recommended requiring the administration to review the cases of the remaining detainees promptly and decide which of them should be held for trial and which should be released.

improve the public's understanding of car seats.

A government study in December found that 40 percent of parents still use seat belts when installing the car seat instead of the system recommended by safety regulators — Lower Anchors and Tethers for Children, or LATCH.

The government recommends car seats for children up to 40 pounds and booster seats for children over 40 pounds until they are 8 years old or 4 feet 9 inches tall. All children should ride in the back seat until age 13.



**EPA To Review
Sanitary Landfill Co. Superfund Site
(a.k.a. Cardington Road Landfill)
Montgomery County, Ohio**

U.S. Environmental Protection Agency is conducting a status review of the Sanitary Landfill Co. Superfund Site, Moraine, Ohio. The Superfund law requires regular reviews of sites (at least every five years) where construction of the cleanup systems is complete but hazardous waste remains managed on site.

The original cleanup plan included a solid waste cap placed on the landfill; a gas collection and destruction system; surface runoff controls and drainage channels; institutional controls on the deed; fencing; and long-term monitoring.

This is the second five-year review for the Sanitary Landfill site. The first one was completed in 2002. It indicated that the cleanup was protecting human health and the environment in the short term. This review, which will be completed by July 2007, is required to ensure that such protection continues.

The review will include an evaluation of background information, cleanup requirements, effectiveness of the cleanup, and any anticipated future actions. A report will be available this summer at:

Dayton Public Library
215 E. Third St.

Moraine Municipal Building
Clerk of Council's Office
4200 Dryden Road

Further information can be obtained by contacting:

Susan Pastor
EPA Community Involvement Coordinator
(312) 353-1325
pastor.susan@epa.gov

Linda Kern
EPA Remedial Project Mgr.
(312) 886-7341
kern.linda@epa.gov

(800) 621-8431, 10 a.m. – 5:30 p.m., weekdays

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Entire Miami Valley"

Dayton Daily News 7/9/07

Attachment B

Site Inspection Checklist

Five-year Review Report

Site Inspection Checklist

I. SITE INFORMATION													
Site name: <u>SAVITARY HDEX (CARDINGTON)</u>	Date of inspection: <u>9/18/07</u>												
Location and Region: <u>MORaine, OH / REGION 5</u>	EPA ID: <u>OH0093895787</u>												
Agency, office, or company leading the five-year review: <u>USEPA</u>	Weather/temperature: <u>SUNNY, DRY, 80°F</u>												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input checked="" type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other _____	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input checked="" type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other _____													
Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
1. O&M site manager <u>MICHAEL PECCIVAK</u> <u>PROJECT COORDINATOR</u> <u>9/18/07</u> <div style="display: flex; justify-content: space-between; margin-left: 100px;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													
2. O&M staff <u>RALPH HIRSHBERG</u> <u>SITE MANAGER</u> <u>9/18/07</u> <div style="display: flex; justify-content: space-between; margin-left: 100px;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. _____ Problems, suggestions; <input type="checkbox"/> Report attached _____ _____													

Agency OHIO EPA
Contact SCOTT GLEUM SITE COORDINATOR 9/20/07 937/285-6665
Title Date Phone no.
Problems; suggestions; Report attached

Agency _____
 Contact _____

Problems; suggestions; _____ Report attached _____	Title _____	Date _____	Phone no. _____
--	-------------	------------	-----------------

Agency _____
 Contact _____

	Title	Date	Phone no.
Problems, suggestions; <input type="checkbox"/> Report attached			

Agency _____
Contact _____

	Title	Date	Phone no.
Problems; suggestions; __ Report attached	_____	_____	_____

[illegible]

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	O&M Documents <input checked="" type="checkbox"/> O&M manual <input checked="" type="checkbox"/> As-built drawings <input checked="" type="checkbox"/> Maintenance logs Remarks _____	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A <input type="checkbox"/> N/A
2.	Site-Specific Health and Safety Plan <input checked="" type="checkbox"/> Contingency plan/emergency response plan Remarks _____	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
3.	O&M and OSHA Training Records Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
4.	Permits and Service Agreements <input type="checkbox"/> Air discharge permit <input type="checkbox"/> Effluent discharge <input type="checkbox"/> Waste disposal, POTW <input type="checkbox"/> Other permits _____ Remarks _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
5.	Gas Generation Records Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
6.	Settlement Monument Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
9.	Discharge Compliance Records <input checked="" type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks _____	<input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input type="checkbox"/> N/A <input type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ☒ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From _____	To _____	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☒ Location shown on site map ☒ Gates secured ☐ N/A
Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** ☒ Location shown on site map ☐ N/A
Remarks _____

C. Institutional Controls (ICs)**1. Implementation and enforcement**

Site conditions imply ICs not properly implemented

☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced

☐ Yes ☒ No ☐ N/AType of monitoring (e.g., self-reporting, drive by) SELF-REPORTING VIA DEEDFrequency RESTRICTIONResponsible party/agency de MAXIMS, INCContact MIKE PECCIAK PROTECT DOCUMENT 706/467-3362

Name

Title

Date Phone no.

Reporting is up-to-date

☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency

☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met

☒ Yes ☐ No ☐ N/A

Violations have been reported

☐ Yes ☐ No ☒ N/AOther problems or suggestions: ☐ Report attached**2. Adequacy**☐ ICs are adequate☐ ICs are inadequate☐ N/ARemarks IC PLAN/STUDY WILL BE PERFORMED SUBSEQUENT
TO FIVE YEAR REVIEW**D. General****1. Vandalism/trespassing**☐ Location shown on site map☒ No vandalism evident

Remarks

2. Land use changes on site ☒ N/A

Remarks

3. Land use changes off site ☐ N/ARemarks SOME REDEVELOPMENT IN AREA SURROUNDING SITE.**VI. GENERAL SITE CONDITIONS****A. Roads**☐ Applicable☒ N/A**1. Roads damaged**☐ Location shown on site map☐ Roads adequate☒ N/A

Remarks

B. Other Site Conditions

Remarks OVERALL SITE CONDITION IS GOOD. NO
REPORTABLE DAMAGES ROUTINE MAINTENANCE
IS ON-GOING

VII. LANDFILL COVERS ☒ Applicable ☐ N/A**A. Landfill Surface**

- | | | | |
|----|--|--|--|
| 1. | Settlement (Low spots)
Areal extent _____
Remarks _____ | ____ Location shown on site map
Depth _____ | <input checked="" type="checkbox"/> Settlement not evident |
| 2. | Cracks
Lengths _____
Remarks _____ | ____ Location shown on site map
Widths _____ Depths _____ | <input checked="" type="checkbox"/> Cracking not evident |
| 3. | Erosion
Areal extent _____
Remarks _____ | ____ Location shown on site map
Depth _____ | <input checked="" type="checkbox"/> Erosion not evident |
| 4. | Holes
Areal extent _____
Remarks _____ | ____ Location shown on site map
Depth _____ | <input checked="" type="checkbox"/> Holes not evident |
| 5. | Vegetative Cover
____ Trees/Shrubs
Remarks _____ | <input checked="" type="checkbox"/> Grass
<input checked="" type="checkbox"/> Cover properly established | <input checked="" type="checkbox"/> No signs of stress |
| 6. | Alternative Cover (armored rock, concrete, etc.)
Remarks _____ | <input checked="" type="checkbox"/> N/A | |
| 7. | Bulges
Areal extent _____
Remarks _____ | ____ Location shown on site map
Height _____ | <input checked="" type="checkbox"/> Bulges not evident |
| 8. | Wet Areas/Water Damage
____ Wet areas
____ Ponding
____ Seeps
____ Soft subgrade
Remarks _____ | <input checked="" type="checkbox"/> Wet areas/water damage not evident
____ Location shown on site map
____ Location shown on site map
____ Location shown on site map
____ Location shown on site map | Areal extent _____
Areal extent _____
Areal extent _____
Areal extent _____ |

9.	Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No evidence of slope instability Areal extent _____ Remarks _____
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)	
1.	Flows Bypass Bench <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____
2.	Bench Breached <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____
3.	Bench Overtopped <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay Remarks _____
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)	
1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement Areal extent _____ Depth _____ Remarks _____
2.	Material Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation Material type _____ Areal extent _____ Remarks _____
3.	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of erosion Areal extent _____ Depth _____ Remarks _____

4.	Undercutting <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of undercutting Areal extent _____ Depth _____ Remarks _____ _____
5.	Obstructions Type _____ <input type="checkbox"/> No obstructions <input type="checkbox"/> Location shown on site map Areal extent _____ Size _____ Remarks _____ _____
6.	Excessive Vegetative Growth Type _____ <input type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels does not obstruct flow <input type="checkbox"/> Location shown on site map Areal extent _____ Remarks _____ _____
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A	
1.	Gas Vents <input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
2.	Gas Monitoring Probes <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____
3.	Monitoring Wells (within surface area of landfill) <input checked="" type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____
4.	Leachate Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs Maintenance <input checked="" type="checkbox"/> N/A Remarks _____ _____
5.	Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A Remarks _____ _____

E. Gas Collection and Treatment			<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Gas Treatment Facilities <input checked="" type="checkbox"/> Flaring <input checked="" type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____			
2.	Gas Collection Wells, Manifolds and Piping <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____			
3.	Gas Monitoring Facilities (<i>e.g.</i> , gas monitoring of adjacent homes or buildings) <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____			
F. Cover Drainage Layer			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Outlet Pipes Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			
2.	Outlet Rock Inspected <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			
G. Detention/Sedimentation Ponds			<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Siltation Areal extent _____ Depth _____ <input type="checkbox"/> N/A <input type="checkbox"/> Siltation not evident Remarks _____			
2.	Erosion Areal extent _____ Depth _____ <input type="checkbox"/> Erosion not evident Remarks _____			
3.	Outlet Works <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			
4.	Dam <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____			

H. Retaining Walls <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Deformations <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Deformation not evident Horizontal displacement _____ Vertical displacement _____ Rotational displacement _____ Remarks _____	
2.	Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Degradation not evident Remarks _____	
I. Perimeter Ditches/Off-Site Discharge <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Siltation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Siltation not evident Areal extent _____ Depth _____ Remarks _____	
2.	Vegetative Growth <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A <input type="checkbox"/> Vegetation does not impede flow Areal extent _____ Type _____ Remarks _____	
3.	Erosion <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Erosion not evident Areal extent _____ Depth _____ Remarks _____	
4.	Discharge Structure <input type="checkbox"/> Functioning <input type="checkbox"/> N/A Remarks _____	
VIII. VERTICAL BARRIER WALLS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Settlement not evident Areal extent _____ Depth _____ Remarks _____	
2.	Performance Monitoring Type of monitoring _____ <input type="checkbox"/> Performance not monitored Frequency _____ <input type="checkbox"/> Evidence of breaching Head differential _____ Remarks _____	

C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Treatment Train (Check components that apply)	
	<input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters _____ <input type="checkbox"/> Additive (e.g., chelation agent, flocculent) _____ <input type="checkbox"/> Others _____ <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually _____ <input type="checkbox"/> Quantity of surface water treated annually _____ Remarks _____ _____	
2.	Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
3.	Tanks, Vaults, Storage Vessels <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
4.	Discharge Structure and Appurtenances <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs Maintenance Remarks _____ _____	
5.	Treatment Building(s) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair <input type="checkbox"/> Chemicals and equipment properly stored Remarks _____ _____	
6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks _____ _____	
D. Monitoring Data		
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality	
2.	Monitoring data suggests: <input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining	

D. Monitored Natural Attenuation**1. Monitoring Wells (natural attenuation remedy)**☐ Properly secured/locked☐ Functioning☐ Routinely sampled☐ Good condition☐ All required wells located☐ Needs Maintenance☒ N/A

Remarks _____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS**A. Implementation of the Remedy**

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

SELECTED REMEDY WAS TO ELIMINATE PRINCIPAL THREATS
POSED BY SITE BY COLLECTING & DESTROYING LANDFILL
GASES, PREVENTING DIRECT CONTACT WITH LANDFILL
WASTE & GREATLY REDUCE THE INFILTRATION OF WATER
INTO WASTE, THUS PREVENTING THE FORMATION OF LEACHATE
BASED ON THE RECENT SITE INSPECTION & DISCUSSION
WITH ON-SITE PERSONNEL, THE REMEDY IS EFFECTIVE
& FUNCTIONING AS DESIGNED.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

LONG-TERM PROTECTIVENESS OF THE REMEDY WILL
BE SUPPORTED BY A THOROUGH EVALUATION OF
ICS AT THE SITE.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

N/A

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

N/A



9/18/07
View of Sanitary Landfill from Cardington Road



9/18/07
Secured gate entrance.



9/18/07
Sanitary Landfill Site posted signage.



9/18/07
Sanitary Landfill Site posted signage along Cardington Road.



9/18/07 Sanitary Landfill Site posted signage along Cardington Road.



9/18/07
View of monitoring gas well MP-2.



9/18/07
View of perimeter fencing of Sanitary Landfill from the east.



9/18/07
On Site vegetative cover looking south.



9/18/07
Landfill Gas Flaring System.



9/18/07
Landfill gas flare.